

1           1.    A method comprising:  
2                focusing an imaging device over at least two  
3   different focal lengths; and  
4                forming an in-focus image including objects at  
5   two different focal lengths.

1           2.    The method of claim 1 including automatically  
2   focusing an imaging device to at least two different focal  
3   lengths.

1           3.    The method of claim 1 including enabling the user  
2   to manually adjust the imaging device to at least two  
3   different focal lengths.

1           4.    The method of claim 1 wherein forming an in-focus  
2   image includes evaluating the sharpness of portions of  
3   images taken at two different focal lengths.

1           5.    The method of claim 4 including evaluating  
2   sharpness on a pixel-by-pixel basis.

1           6.    The method of claim 5 including evaluating  
2   sharpness on a pixel-by-pixel basis and storing sharpness  
3   information in an alpha channel associated with each pixel.

1           7.    The method of claim 4 including comparing the  
2 sharpness values of two captured frames and weighting  
3 pixels having sharpness values indicating better focus more  
4 than pixels having sharpness values indicating poorer  
5 focus.

1           8.    The method of claim 7 including generating a  
2 composite image containing image portions taken over at  
3 least two different focal lengths by comparing the quality  
4 of focus of two different image portions and weighting the  
5 image portion with better focus.

1           9.    The method of claim 1 including transforming a  
2 subsequent frame to match the characteristics of a previous  
3 frame taken at a different focal length.

1           10.   The method of claim 9 including transforming the  
2 size of one of two frames taken at different focal lengths.

1           11.   An article comprising a medium storing  
2 instructions that enable a processor-based system to:  
3                focus an imaging device over at least two  
4 different focal lengths; and  
5                form an in-focus image to include objects at  
6 two different focal lengths.

1        12. The article of claim 11 further storing  
2 instructions that enable a processor-based system to  
3 automatically focus an imaging device to at least two  
4 different focal lengths.

1        13. The article of claim 11 further storing  
2 instructions that enable a processor-based system to enable  
3 the user to manually adjust the imaging device to at least  
4 two different focal lengths.

1        14. The article of claim 11 further storing  
2 instructions that enable a processor-based system to  
3 evaluate the sharpness of portions of images taken at two  
4 different focal lengths.

1        15. The article of claim 14 further storing  
2 instructions that enable a processor-based system to  
3 evaluate sharpness on a pixel-by-pixel basis.

1        16. The article of claim 15 further storing  
2 instructions that enable a processor-based system to  
3 evaluate sharpness on a pixel-by-pixel basis and store  
4 sharpness information in an alpha channel associated with  
5 each pixel.

1        17. The article of claim 14 further storing  
2 instructions that enable a processor-based system to  
3 compare the sharpness values of two captured frames and  
4 weight pixels having sharpness values indicating better  
5 focus more than pixels that have sharpness values  
6 indicating poorer focus.

1        18. The article of claim 17 further storing  
2 instructions that enable a processor-based system to  
3 generate a composite image containing image portions taken  
4 over at least two different focal lengths by comparing the  
5 quality of focus of two different image portions and  
6 weighting the image portion with better focus.

1        19. The article of claim 11 further storing  
2 instructions that enable a processor-based system to  
3 transform a subsequent frame to match the characteristics  
4 of a previous frame taken at a different focal length.

1        20. The article of claim 19 further storing  
2 instructions that enable a processor-based system to  
3 transform the size of one of two frames taken at different  
4 focal lengths.

1           21. A system comprising:  
2               an imaging device; and  
3               a controller to focus the imaging device over  
4 at least two different focal lengths and form an in-focus  
5 image including objects at two different focal lengths.

1           22. The system of claim 21 wherein said controller  
2 automatically focuses the imaging device to at least two  
3 different focal lengths.

1           23. The system of claim 21 wherein said controller  
2 accepts manual focal adjustments to the imaging device to  
3 at least two different focal lengths.

1           24. The system of claim 21 wherein said controller  
2 evaluates the sharpness of portions of images taken at  
3 two different focal lengths.

1           25. The system of claim 24 wherein said controller  
2 evaluates sharpness on a pixel-by-pixel basis.

1           26. The system of claim 25 wherein said controller  
2 evaluates sharpness on a pixel-by-pixel basis and stores  
3 sharpness information in the alpha channel associated  
4 with each pixel.

1           27. The system of claim 24 wherein said controller  
2 compares sharpness values of two captured frames and  
3 weights pixels having sharpness values indicating better  
4 focus more than pixels that have sharpness values  
5 indicating poorer focus.

1        28. The system of claim 27 wherein said controller  
2 generates a composite image containing image portions  
3 taken over at least two different focal lengths by  
4 comparing the quality of focus of two different image  
5 portions and weighting the image portion with better  
6 focus.

1        29. The system of claim 21 wherein said controller  
2 transforms a subsequent frame to match the  
3 characteristics of a previous frame taken at a different  
4 focal length.

1        30. The system of claim 29 wherein said controller  
2 transforms the size of one of two frames taken at  
3 different focal lengths.